

Name: _____

Per: _____

The Periodic Table & Chemical Bonding Lab: Reactivity Trends

Introduction

In this lab, students will explore how different elements found on the periodic table react with different materials. From their findings, students should be able to describe the trend found in both the periods and families of the periodic table. Reactivity refers to the ability of an element to experience a chemical change when brought into contact with a solution and also the magnitude of the chemical reaction.

Define the following terms as they relate to the periodic table,

Period: _____

Group: _____

Fill in the periodic table below by listing the elements used in the lab. Place their symbol in the correct location. (Lithium, Sodium, Potassium, Magnesium, Calcium, Aluminum)

	1								18
1		2			13	14	15	16	17
2									
3			Transition Elements						
4									

Hypothesis (check two guesses)

- ☐ Reactivity will increase moving across the periods of the periodic table due to the added valence electron.
- ☐ Reactivity will decrease moving across the periods of the periodic table due to the added valence electron.
- ☐ Reactivity will increase moving down the families of the periodic table due to the added valence electron.
- ☐ Reactivity will decrease moving down the families of the periodic table due to the added valence electron.

Name: _____

Per: _____

Design**Supply List**

Lithium, Sodium, Potassium, Magnesium, Calcium, Aluminum, Phenolphthalein, Distilled Water, 1.0 M Hydrochloric Acid, a well plate, tongs.

Procedure

1. Fill three wells with 20 drops distilled water. Fill three wells with 20 drops 1.0 M hydrochloric acid.
2. Add 1-2 drops of phenolphthalein to each well.
3. Add one piece of magnesium to water filled well and observe what occurs. Record any observations.
4. Add one piece of magnesium to hydrochloric acid filled well and observe what occurs. Record any observations.
5. Repeat steps 3 & 4 for Aluminum and Calcium (in that order)

Results**Overview**

The data collected in the lab were qualitative observations. They are meant to describe the chemical reaction that took place. No quantitative data was collected.

Presentation

Element	Water	Acid
Lithium		
Sodium		
Potassium		
Magnesium		
Aluminum		
Calcium		

Name: _____

Per: _____

Fill in the periodic table below by listing the elements used in the lab. Place their symbol in the correct location. Indicate the rate of reaction with water of the elements by shading in the elements with the color blue. The greater the reaction rate, the darker the shade. Be sure to a comparison can be made of the of the touching elements' shade.

	1							18
1				13	14	15	16	17
2								
3			Transition Elements					
4								

Fill in the periodic table below by listing the elements used in the lab. Place their symbol in the correct location. Indicate the rate of reaction with hydrochloric acid of the elements by shading in the elements with the color red. The greater the reaction rate, the darker the shade. Be sure to a comparison can be made of the of the touching elements' shade.

	1							18
1				13	14	15	16	17
2								
3			Transition Elements					
4								

Evaluating Results

Conclusion

1. Explain how the reactivity changes going across a period on the periodic table based on observations and the shading done on the periodic tables above.
2. Explain how the reactivity changes going down a column on the periodic table based on observations and the shading done on the periodic tables above.